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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,423	12/29/2000	Robert A. Morgan	1100.1114101	7851

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EXAMINER

WILLE, DOUGLAS A

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 08/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/751,423

Applicant(s)

MORGAN ET AL.

Examiner

Douglas A Wille

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 10-14, 19 and 36-44 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 and 18 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 23-35 is/are rejected.
- 7) ☒ Claim(s) 17, 20- 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 5, 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2, 7, 17, 21, 27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claims 2 and 27 show the first material as being patterned and filled with the second material. Considering the relationship with claim 3, the first material (see Figure 2) is 56 and the second is 58. Claims 2, 27 show the first index is greater than the second but claims 7 and 28 show the first material as being SiO_2 and the second as Si_3N_4 , which have indices opposite to that claimed. It is also noted that the layers do not appear to function as claimed with the layers as shown in claims 2, 27.

4. Claims 17 and 21 refer to the layer as producing a phase shift. With respect to what? Does this mean a phase shift relative to the full thickness layer? Note that any optical propagation produces a phase shift.

Election/Restrictions

5. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1 – 9, 15 – 18 and 20 - 35, drawn to a device, classified in class 257, subclass 98.
 - II. Claims 10 – 14, 19, 36 - 44, drawn to a method, classified in class 438, subclass 29.

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The inventions are distinct, each from the other because of the following reasons:

6. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the structure could be formed by depositing the first material through a mask and then providing the second material.

7. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

8. During a telephone conversation with Brian Tufte on 20 August 2002 a provisional election was made without traverse to prosecute the invention of I, claims 1 – 9, 15 – 18 and 20 - 35. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10 – 14, 19 and 36 - 44 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

9. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

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Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. Claims 1 – 7 and 9 are rejected under 35 U.S.C. 102(a) as being anticipated by Johnson.

12. With respect to claims 1 and 3, Johnson shows (see Figure 16 and column 10, line 30) a layer 50, which is patterned, on layer 21, which is the upper mirror layer, and second material layer 160 fills the pattern and covers the pattern.

13. With respect to claim 2, $n_{160} < n_{50}$ and both are $< n_{21}$.

14. With respect to claim 4, the patterned regions have reduced reflectivity (column 10, line 44).

15. With respect to claim 5, the structure provides mode control (see abstract).

16. With respect to claim 6, the pattern is all the way through.

17. With respect to claim 7, the materials are silicon dioxide and silicon nitride (column 11, line 4).

18. With respect to claim 9, layer 21 is the upper mirror layer (column 6, line 55).

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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20. Claims 23 – 28 and 31 – 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Corzine et al.
21. With respect to claim, 23, Corzine et al. show a resonant reflector (see Figure 4A and column 13, line 52 et seq.) 419A, 451, 453 where the reflectivity does not change abruptly across the cavity.
22. With respect to claim 24, the resultant refractive index does not change abruptly.
23. With respect to claim 25 the different layers contribute.
24. With respect to claim 26 the different material layer coextend.
25. With respect to claims 27 and 28 there are different indices and one material is SiO₂ and the other is Si₃N₄ or TiO₂ (column 14, line 35).
26. With respect to claim 31, the top mirror layer is 465.
27. With respect to claims 32 and 33, the mirrors are AlGaAs/AlAs layers (column 5, line 38) and the top layer could be AlGaAs.
28. With respect to claims 34 and 35, the structure is seen in Figure 4A as described above.

Claim Rejections - 35 USC § 103

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

30. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson.
31. With respect to claim 8, the reflection analysis is the same for the case where the patterned layer is part of the mirror, if the correct layer is selected as the top layer, and it would

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have been obvious to use patterning of the upper mirror layer since it saves a deposition step and is therefore simpler and less costly.

Allowable Subject Matter

32. Claims 15, 16 and 18 are allowed. The prior art shows output mirrors in a mesa structure but does not show etching the main Bragg reflector and then adding a mesa reflector.

33. Claim 17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

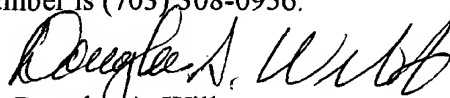
34. Claims 20 – 22 would be allowable if the structural features of claim 19 were included.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A Wille whose telephone number is (703) 308-4949. The examiner can normally be reached on M-F (6:15-3:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Douglas A. Wille
Patent Examiner

daw
August 27, 2002